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ABSTRACT

This module on the nervous system is the fifth of ten (CE 028 308-318) in the barbering/cosmetology course of a bilingual skills training program. (A Vocabulary Development Workbook for modules 6-10 is available as CE 028 313.) The course is designed to furnish theoretical and laboratory experience. Module objectives are for students to develop trade-related Spanish/English vocabulary, to describe components and function of the nerve cell, to name types of nerves, to identify the main parts of the nervous system; to locate the cranial and cervical nerves, and to name methods for stimulating the nerves. Contents include list of module objectives; pretest; five sections on (1) nerve cell, (2) types of nerves, (3) division of the nervous system, (4) cranial nerves, and (5) nerve fatigue and relaxation; posttest; and English/Spanish vocabulary list. Each section is organized into this format: instructions, vocabulary, and concepts (statements or questions to direct reading) presented in English and Spanish; readings; and worksheets to evaluate comprehension of the trade-related reading material. (Readings in modules 1-5 are in both English and Spanish.) Worksheets also cover these areas: vocabulary, definitions, word attack skills, writing skills, spelling, and application of terminology to the trade area. (YLB)

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ED199501

BILINGUAL SKILLS TRAINING PROGRAM
BARBERING/COSMETOLOGY

MODULE 5.0

N E R V O U S S Y S T E M

U.S. DEPARTMENT OF HEALTH
EDUCATION & WELFARE
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NORTHERN NEW MEXICO COMMUNITY COLLEGE
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I. PURPOSE

This module is to:

1. Assist students in developing trade-related vocabulary.
2. Facilitate the learning of the trade through reading information sheets, vocabulary lists and language exercises.
3. Provide student with individual check lists for individual progress.

II. INRODUCTION

Cosmetology and Barbering require the student to follow a defined theoretical course of study as well as acquire practical knowledge in the respective trade. Due to the limited amount of time allowed for theory and the difficulty of the technical vocabulary found in the reading, the student often needs additional help in this area. Students in above trades are required to pass the State Board Examination before practicing their trade. To succeed in passing this exam and to be better equipped for the job, the student must be able to function in the oral and written communication skills and utilize the technical vocabulary of their trade. This module is structured to provide for individual needs of the students so that they may progress at their pace in the academic or theoretical area. A simple coding system is utilized to facilitate the student use.

III. ACTIVITIES

Because each module is geared for individualized instruction it is important to assess the individual needs of the students. A pre-test is administered to students before they begin working with a module. Instructions are given orally in Spanish and English.

Instructions, vocabulary and concepts in each module are written in Spanish and English so as to explain the purpose of each reading. There is a reading for each objective presented in the module. The reading is referred to as an information sheet. This sheet is designed to provide the student with reading material incorporating the technical vocabulary that is needed in the trade skill area. The gradation of reading is from simple to more complex. Thus the information sheet facilitates the learning process in the theoretical course of study. Each information sheet is followed by a series of diversified work sheets directly checking for comprehension of the reading material. Other items covered in these work sheets are: vocabulary, definitions, word attack skills, writing skills, spelling and application of terminology to the trade area.

Oral language development exercises directed by the instructor constantly reinforce the concepts presented. Students have an opportunity to utilize and develop the technical vocabulary needed in their trade by interaction among themselves, the instructor and tutors. The Bilingual dimension is specifically directed at concept and vocabulary development.

The students are directed to utilize supplementary materials available through the Learning Resource Center to reinforce each area as they progress in the module. Audio visuals are utilized to introduce subject matter. They are also accessible to the students to be used on an individual basis.

IV. EVALUATION

The students are evaluated by the instructors as to their progress in language and in the course content area through the pre-test, work sheets, check list and a post test. Individual student profiles and folders are kept on record to check on student progress at all times. Oral development skills are assessed individually.

Students go through the following process in utilizing the modules:

Pre-test (Students scoring 85% or below must complete the entire module. Those scoring above 85% may go on to the next module).

Reading of instruction sheet
Information sheet
Series of written and oral exercises
Oral evaluation
Post test (oral and written)
Recycling, if needed (Students scoring 85% or below on post-test are recycled through module in designated weak areas. See coding system.)

V. MODULE OUTLINE

5.0 The Nervous System

5.1 The Nerve Cell

5.2 Types of Nerves

5.3 Division of the Nervous System

5.4 The Cranial Nerves

5.5 Nerve Fatigue and Relaxation

STUDENT OBJECTIVES

After completing this module the student will be able to:

5.1 Describe the components and function of the nerve cell.

5.1.1 Describe the function of the dendrites.

5.1.2 Describe the function of the axons.

5.1.3 Describe how the nerve fibers work together.

5.2 Name the three types of nerves.

5.2.1 Describe the function of the sensory (afferent) nerves.

5.2.2 Describe the function of the motor (efferent) nerves.

5.2.3 Describe the function of the mixed nerves.

5.3 Identify the three main parts of the nervous system.

5.3.1 Describe the function of the central nervous system.

5.3.2 Describe the function of the peripheral nervous system.

5.3.3 Describe the function of the autonomic nervous system.

5.4 Locate and trace on a diagram the three cranial nerves and the cervical nerves.

5.5 Name at least five (5) methods for stimulating the nerves.

PRE-TEST 5.0

1. Why is the nervous system referred to as a communication system?

2. What are the two types of nerve fibers and what do they do?

3. What are the functions of the sensory and motor nerves?

4. Name the five sense organs and the function of each.

5. What are the two main functions of the central nervous system?

6. Name the five parts that make up the brain.

7. Name the three cranial nerves that barbers and cosmetologists need to know about.

8. What are the three divisions of the trigeminal nerve?

9. What are the signs of nerve fatigue?

10. How can you relieve your client of nerve fatigue?

Instructions:

In this information sheet you will read some interesting things about the nerve cell. Below is a list of words which you should be familiar with. Understanding these words will help you comprehend the information presented much better.

Instrucciones:

En esta selección se presenta información muy interesante sobre la célula nerviosa. Abajo sigue una lista de palabras que debes de conocer. Estas palabras te ayudarán a comprender mejor la información que se presenta.

Vocabulary	Vocabulario
Nervous system	sistema nervioso
brain	cerebro
spinal cord	columna vertebral
nerves	nervios
fibers	fibras
nerve fibers	fibras nerviosos
impulses	impulsos
central	central
muscles	músculos
glands	glándulas
nerve cell (neuron)	célula nerviosa (neurona)
nucleus	núcleo
dendrites	dendritas

Keep the following questions in mind as you read the following information.
Te debes de hacer estas preguntas al leer este artículo.

1. What is the nervous system composed of?
   ¿De qué consiste el sistema nervioso?

2. What is the central nervous system composed of?
   ¿De qué consiste el sistema nervioso central?

3. What is the basic unit of the nervous system?
   ¿Qué es la unidad básica del sistema nervioso?

4. What are the two types of nerve fibers?
   ¿Cuáles son los dos tipos de fibras nerviosos?

5. Why is the nervous system referred to as a communication system?
   ¿Por qué se refiere al sistema nervioso como un sistema de comunicación?

The Nerve Cell

1. As a Cosmetologist or Barber you are required to have a knowledge of the human body and how it works. In your trade you will deal with parts of the body and you must know what effects your treatments will have on them.

2. The human body is composed of nine systems. Of these nine systems the nervous system is the most important. The nervous system controls the other systems of the body and helps them to work properly. The nervous system is composed of three main parts which are: The brain, the spinal cord and the nerves.

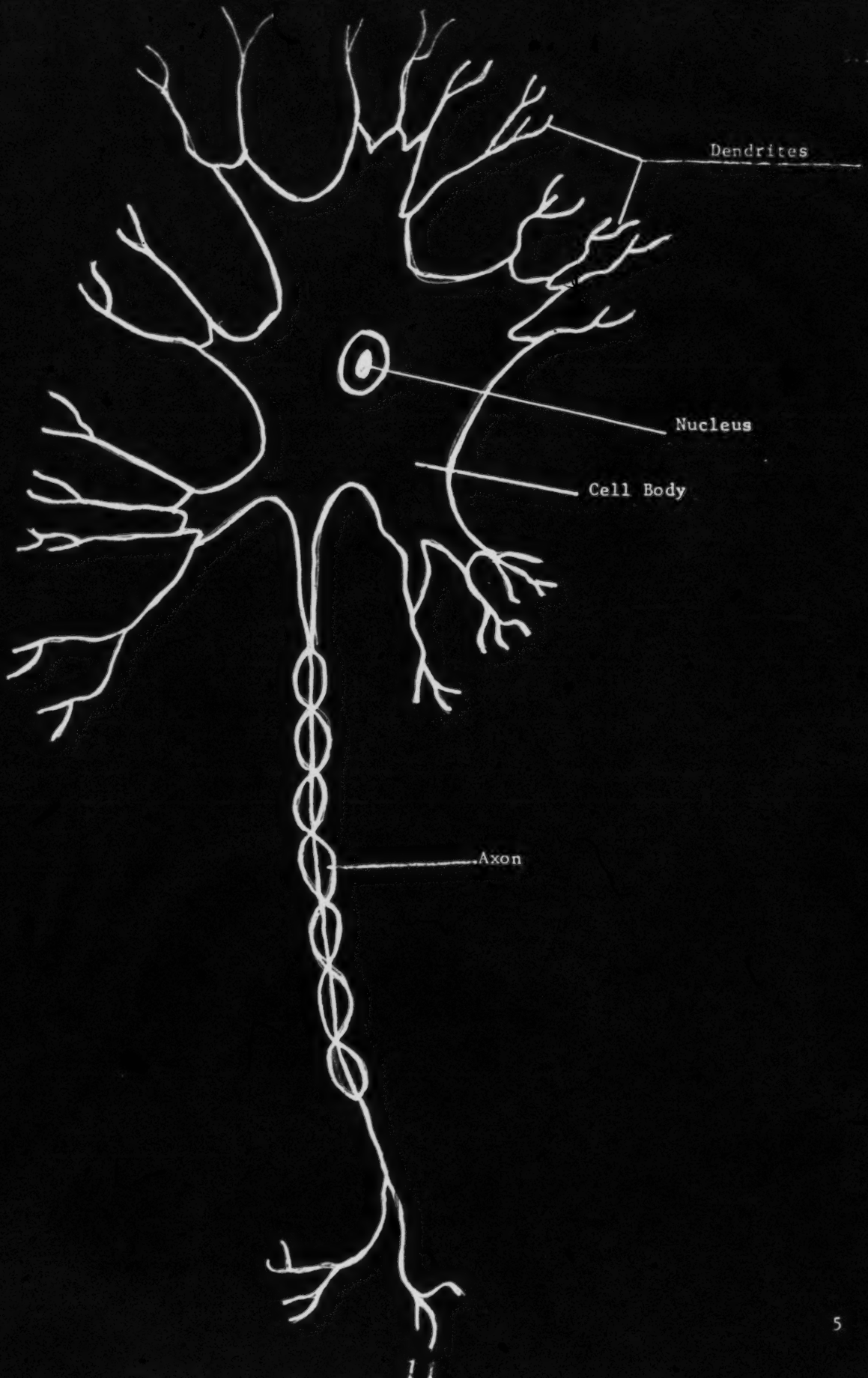
3. The nervous system can be thought of as a communications system. This communications system is strung throughout the body. The wires of this system are nerve fibers. These fibers carry impulses or messages from sensitive parts of the body to the central nervous system. The central nervous system is composed of the brain and spinal cord. The nerve fibers also carry impulses from the central nervous system to the muscles and glands in the body.

4. So far you have read that the nervous system can be looked at as a communications system, but how does it work? To understand how it works you must start at the beginning. The basic unit of the nervous system is the nerve cell or neuron. The neuron has a cell body and a nucleus. The neuron also has two types of nerve fibers. One of these fibers is called dendrites. The word dendrites comes from the Greek word Dendron which means tree or branches. These fibers are small and extend only a short distance around the cell body.

5. The other fiber is called axon. The axons are usually very long. They can extend from the spinal cord to the toes. There is only one axon on each

neuron or nerve cell. The axons sometimes connect to axons or dendrites of other neurons. This helps the impulses to be carried from, shall we say, the toes to the central nervous system. Without the connection the impulse might not reach the central nervous system if it was being carried by a small axon.

6. The next information sheet will explain the types of nerves and their function. There is also a diagram that will show you the composition of a neuron.


Dendrites
Nucleus
Cell Body
Axon

La Célula Nerviosa (Neurona)

1. Como peluquero o cosmetólogo, estás requirido que tengas fondo sobre la función del cuerpo humano. En tu vocación vas a trabajar con designadas partes del cuerpo humano y debes saber qué efecto tendrán tus tratamientos en estas partes.

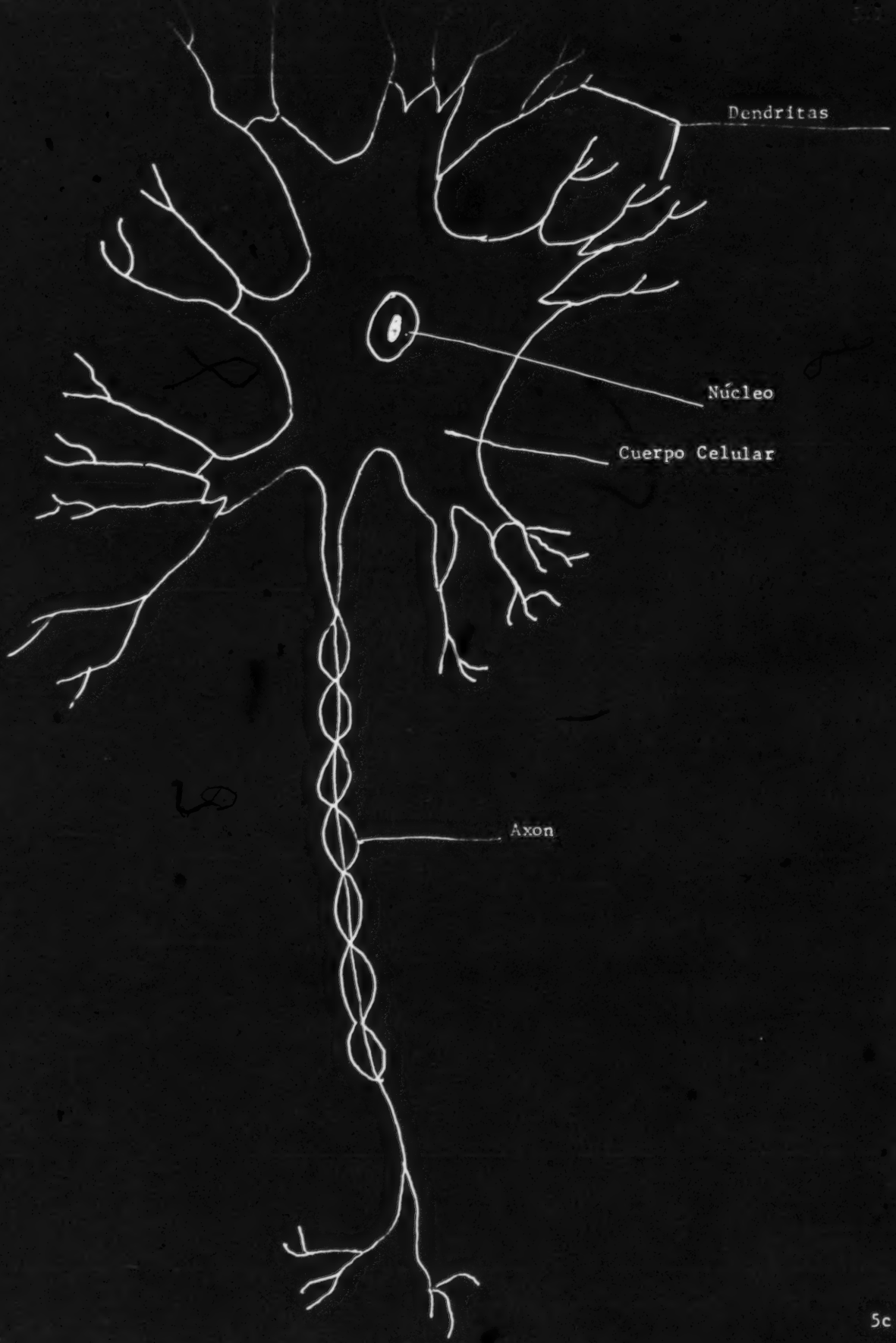
2. El cuerpo humano está compuesto de nueve sistemas. De estos nueve sistemas el sistema nervioso es el más importante. El sistema nervioso controla los otros sistemas del cuerpo y les ayuda para que funcionen bien. El sistema nervioso est compuesto de tres partes básicas: el cerebro (o encéfalo), la columna vertebral (o medula espinal) y sus nervios.

3. El sistema nervioso se puede comparar a un sistema de comunicación. Este sistema de comunicación está tejido por todo el cuerpo. Los hilos de este sistema son fibras nerviosas. Estas fibras transportan impulsos o mensajes de las partes sensitivas del cuerpo al sistema nervioso central. El sistema nervioso central está compuesto de el cerebro y la columna vertebral. Las fibras nerviosas también transportan impulsos del sistema nervioso central a los músculos y a las glándulas en el cuerpo.

4. Hasta ahora has leído que el sistema nervioso se puede comparar a un sistema de comunicación, pero, ¿cómo funciona este sistema? Para comprender como funciona, debes de empezar con información básica. La unidad básica del sistema nervioso es la célula nerviosa o la neurona. La neurona también tiene dos tipos de fibras nerviosas. Una de estas fibras es llamada dendrita. La palabra dendrita se deriva de el idioma griego y quiere decir árbol o ramas. Estas fibras son chicas y se extenden por una corta distancia alrededor del cuerpo celular.

5. La otra fibra se llama "axon." Los "axons" casi siempre son muy largas. Pueden extender desde la columna vertebral hasta los dedos de los pies. Hay solamente un "axon" en cada neurona o célula nerviosa. Los "axons" a veces se conectan a "axons" o dendritas de otras neuronas. Esto ayuda a los impulsos para que sean transportados de los dedos de los pies hasta el sistema nervioso central. Sin esta conección, tal vez, los impulsos no llegaran al sistema nervioso central si fueran transportados con un "axon" chico.

6. La siguiente página de información explicará los tipos de nervios y sus funciones. También hay un dibujo que enseñará la composición de una neurona.



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Find the Answers

1. The basic unit of the nervous system is the

   A. dendrite
   B. axon
   C. neuron
   D. spinal

2. The word in paragraph 2 which means made up of is _____.

3. The words "communications system" in paragraph 3 refer to the_____
   _____.

4. The article does not say so, but it makes you think that

   A. Without the proper functioning of nerve fibers we might not be able to walk and think.
   B. The dendrites are more important than the axons.
   C. Nerve fibers can function independently.

5. The nervous system controls the other systems of the body.

   Yes No Does not say

6. On the whole, this story is about

   A. The effects of nerves on the body.
   B. The neuron.
   C. The nine systems.

7. What is the most important system of the human body?

   A. The muscular system
   B. The skeletal system
   C. The nervous system

Match the following:

_____carry impulses to the central nervous system	A. dendrites and axons
_____compose central nervous system	B. neuron
_____basic unit of the nervous system	C. brain and spinal cord.
_____small fibers	D. dendrites
_____long fibers	E. nerve fibers
_____two types of fibers	F. axons
_____composed of brain, spinal cord, nerves	G. nervous system
_____has a cell, body and a nucleus	H. neuron
_____nerve cell	I. neuron

Fill in the blanks with the word you think belongs without looking back at the original article.

The nervous system can _____thought of as a _____ system. This communications system _____strung throughout the body. _____wires of this system _____nerve fibers. These fibers _____impulses or messages from _____parts of the body _____the central nervous system. _____central nervous system is _____of the brain and _____cord.

Answer the following questions in your own words.

1. Give two reasons why barbers and cosmetologists should be familiar with the nervous system.

   a.

   b.

2. What are the three main parts of the nervous system?

   a.

   b.

   c.

3. What are the "wires" of the nervous system called?

4. What is the central nervous system composed of?

5. Identify two functions of the nerve fibers.

   a.

   b.

6. What is the basic unit of the nervous system?

7. Describe a dendrite.

8. What are axons?

9. How many types of fibers does a neuron have?

10. How many axons are there on each nerve cell?

Instructions:

In this selection you will read about the types of nerves and their function. It is important that you comprehend how these nerves function so that you will be more sensitive to the needs of your clients. Below is a vocabulary list which is important in this selection.

Instrucciones:

En esta selección vas a leer de los tipos de nervios y sus funciones. Es importante que comprendas como funcionan estos nervios para que seas mas atento a tus clientes. Abajo sigue una lista de vocabulario que es importante en esta selección.

Vocabulary	Vocabulario
sensory nerves (afferent)	nervios sensitivos (aferentes)
motor nerves (efferent)	nervios motores (eferentes)
mixed nerves	nervios mixtos
sense organs	órganos de sentidos
impulses	impulsos
skin	piel
seeing	vista
smelling	olfato
tasting	gusto
feeling	tacto
hearing	oído

Keep the following questions in mind as you read the following information.
Recuerda estas preguntas al leer el siguiente artículo.

1. What are the three types of nerves?
   ¿Cuáles son los tres tipos de nervios?

2. What are the sense organs?
   ¿Cuáles son los órganos de sentido?

3. What are the messages that the sensory nerves carry?
   ¿Cuáles son los mensajes que llevan los nervios sensitivos?

4. What is the function of the motor (efferent) nerves?
   ¿Cuál es la función de los nervios motores (eferentes)?

5. What are mixed nerves composed of and what is their function?
   ¿De qué se componen los nervios mixtos y cual es su función?

Types of Nerves

1. As you may remember the neuron or nerve cell has fibers that are called dendrites and axons. The axons are long white fibers that carry impulses. These axons are also called nerves. There are three types of nerves that carry the impulses. These nerves are called sensory, motor and mixed nerves.

2. The sensory nerves are also called afferent nerves. The sensory or afferent nerves carry impulses (messages) from the sense organs to the brain. Do you know what sense organs are? The sense organs are your ears, eyes, tongue, nose and hands. Now, what are the messages (impulses) that the sensory nerves carry? The messages are seeing, smelling, tasting, feeling, and hearing. As you may have noticed, the name of this nerve tells what its function is. Sensory means that it has to do with the five senses or sense organs.

3. The second type of nerves are called motor nerves or efferent nerves. These nerves carry impulses from the brain to the muscles in the body. The impulses or messages produce movement in the muscles. Again, the name of the nerve tells what its function is. The word motor means motion or movement.

4. The third nerve is called mixed nerve. Mixed nerves are made up of sensory nerves and motor nerves. If you remember the functions of sensory and motor nerves, then it is easy to figure out what the function of mixed nerves is. Since mixed nerves are made up of sensory nerves and motor nerves then the function of mixed nerves is to carry impulses from the sense organs to the brain and also to carry impulses from the brain to the muscles.

5. Now, let's remember that the sensory nerves carry impulses from the sense organs to the brain. The sensory nerves are located near the surface of the skin. When you use one of your five senses the sensory nerves carry the message to the brain. Let's say that you touched a hot curling iron. When your sense of touch feels it hot a message is sent to your brain saying that it is hot. Your brain then sends a message through your motor nerves which make you remove your hand from the hot curling iron before you burn your hand.

6. In the first two information sheets you read about the basic parts of the nervous system; the neuron, dendrites and axons. You also read about the sensory, motor and mixed nerves. The next reading will deal with the division of the nervous system. If you do not understand the first two readings, read them again or ask your instructors to help you.

Tipos de Nervios

1. Como recuerdas, la neurona o célula nerviosa tiene fibras que se llaman dendritas y "axons." Los "axons" son fibras blancas y largas que transportan impulsos. Estos "axons" también se llaman nervios. Hay tres tipos de nervios que transportan los impulsos. Estos nervios se llaman nervios sensitivos, nervios motores y nervios mixtos.

2. Los nervios sensitivos también se llaman nervios aferentes. Los nervios sensitivos o aferentes transportan impulsos (mensajes) de los órganos sensitivos al cerebro. ¿Sabes cuáles son los órganos sensitivos? Los órganos sensitivos son los oídos, los ojos, la lengua, la nariz y las manos. Ahora, ¿cuáles son los mensajes (impulsos) cuales son transportados por los nervios sensitivos? Los mensajes son relacionados con la vista, el olfato, el gusto el tacto y el oído. Como ya habrás notado, el nombre de este nervio dice su función. Sensitivo significa que tiene que ver con los cinco sentidos o órganos sensitivos.

3. El segundo tipo de nervios se llaman nervios motores o nervios eferentes. Estos nervios transportan impulsos del cerebro a los músculos del cuerpo. Los impulsos o mensajes producen movimiento en los músculos. Como hemos dicho, el nombre del nervio dice cual es su función. El nombre "motor" significa movimiento.

4. El tercer nervio se llama nervio mixto. Nervios mixtos están compuestos de nervios sensitivos y nervios motores. Si recuerdas la función de los nervios sensitivos y motores, es fácil que figures cuál es la función de los nervios mixtos. Como los nervios mixtos están compuestos de nervios sensitivos y nervios motores, la función de los nervios mixtos es transportar impulsos de los órganos sensitivos al cerebro y también de transportar impulsos del cerebro a los músculos.

5. Recuerda que los nervios sensitivos transportan impulsos de los órganos sensitivos al cerebro. Los nervios sensitivos están localizados cerca del superficie de la piel. Cuando usas uno de los cinco sentidos, los nervios sensitivos transportan el mensaje al cerebro. Diremos que tocas unas tenazas térmicas. Cuando el sentido del tacto las siente calientes, inmediatamente se manda un mensaje al cerebro diciendole que está caliente. Entonces el cerebro manda un mensaje por los nervios motores cuales te hacen quitar tu mano de las tenazas térmicas calientes antes que te quemes la mano.

6. En las dos páginas de información leiste de las partes básicas del sistema nervioso; la neurona, la dendrita, y los "axons." También leiste de los nervios sensitivos motores y mixtos. La siguiente lectura tratará con la división del sistema nervioso. Si no comprendiste las primeras dos lecturas, léelas de vuelta o pídele ayuda al instructor.

Find the Answers 5.2

1. The sensory nerves are called

   A. afferent nerves
   B. efferent nerves
   C. motor nerves
   D. mixed nerves

2. The word in paragraph 5 which means messages is _____.

3. The words "sensory nerves" in paragraph 5 refer to the word _____ nerves..

4. The story does not say so, but it makes you think that

   A. The function of all nerve fibers is the same.
   B. The function of the mixed nerves is the most important.
   C. The function of all nerves is very important.

5. The mixed nerves are composed of sensory nerves and motor nerves.

   Yes No Does not say

6. On the whole, this story is about

   A. The sensory and motor nerves.
   B. The mixed and motor nerves.
   C. The three types of nerves.

7. Where are the sensory nerves located?

   A. On the scalp and neck.
   B. Near the surface of the skin.
   C. Near the nose, hands and ears.

Read the following sentences and indicate if they are true (T) or false (F).

_____Axons are long white fibers that carry impulses.

_____The motor nerves are called afferent nerves.

_____The sensory nerves are called efferent nerves.

_____Sensory, motor and mixed nerves carry impulses.

_____The sense organs are: ears, eyes, tongue, nose and hands.

_____Mixed nerves are composed of sensory and motor nerves.

_____Sensory nerves are located near the surface of the skin.

_____Sensory nerves produce movement in the muscles.

Fill in the spaces with the correct word from the list below.

afferent	efferent	neuron
axons	mixed	motor

1. The sensory nerves are called _____ nerves.

2. The _____ nerves carry impulses from the brain to the muscles.

3. The _____ are long white fibers that carry impulses.

4. The word _____ means motion or movement.

5. _____ nerves are made up of sensory and motor nerves.

6. The _____ has fibers called dendrites and axons.

Answer the following questions using your own words.

1. What are the three types of nerves that carry impulses?

2. Where do the afferent nerves carry impulses to?

3. Name the five sense organs.

4. What are the messages that the sense organs carry?

5. What is another word for motor nerves? What is their function?

6. What is the function of the mixed nerves?

Instructions:

In the following reading selection you will be given some information on the division of the nervous system. After reading this selection you will have a better understanding of the functioning of this fascinating system in your body. Below is a list of important words found in the reading. If you learn this vocabulary it will be easier for you to understand the reading selection.

Instrucciones:

En la siguiente selección de lectura hay información sobre la división del sistema nervioso. Al leer este artículo vas a comprender mejor como funciona este sistema fascinante de tu cuerpo. Abajo sigue una lista de vocabulario importante que se encuentra en esta selección. Si dominas este vocabulario, será mas facil comprender la selección de lectura.

Vocabulary	Vocabulario
central nervous system (cerebro-spinal)	sistema nervioso central
peripheral nervous system	sistema nervioso periférico
autonomic nervous system (sympathetic)	sistema nervioso autónomo
cerebrum	cerebro
cerebellum	cerebelo
pons	puente de varolio
medulla oblongata	medula oblongada
cranial nerves	nervios del cráneo

Keep the following questions in mind as you read the following information.
Recuerda las siguientes preguntas al leer la siguiente información.

1. What are the three main parts of the nervous system?
   Cuáles son las tres partes mayores del sistema nervioso?

2. What are the two main functions of the central or cerebro-spinal nervous syste
   Cuáles son las dos funciones mayores del sistema nervioso central?

3. Name the five parts composing the brain and the function of each.
   Nombra las cinco partes que contiene el cerebro y la función de cada una.

4. What is the spinal cord composed of?
   De qué consiste la columna vertebral?

5. What is the peripheral nervous system composed of and what is its function?
   De qué consiste el sistema nervioso periferico y cuál es su función?

6. What is the function of the autonomic or sympathetic nervous system?
   Cuál es la función del sistema nervioso autónomo?

Division of the Nervous System

1. In the first two readings you read about the very basic parts of the nervous system. In this reading the nervous system will be divided into three main parts. The main parts are:
   a. The central or cerebro-spinal nervous system.
   b. The peripheral nervous system.
   c. The autonomic or sympathetic nervous system.

2. The central or cerebro-spinal nervous system is composed of the brain and spinal cord. The cerebro-spinal nervous system has two main functions. It must regulate the voluntary functions of the five senses and also must regulate the voluntary movements of the muscles.

3. The brain is considered the central power station of the body. The brain is divided into five parts. The five parts are:
   a. Cerebrum - the large frontal part; it controls emotions, will and reasoning.
   b. Cerebellum - the small lower part; it keeps the body in balance.
   c. Pons - is the front of the cerebellum and connects the cerebellum to the cerebrum.
   d. Medulla Oblongata - looks like a bulb and connects the brain to the spinal cord.
   e. Cranial Nerves - 12 pair of nerves that come from the brain to different areas of the head, face and neck.

4. The spinal cord is made up of masses of nerve cells or neurons and nerve fibers that run throughout the body. There are thirty-one spinal nerves that reach out to the skin, trunk, limbs of the body and also connect with nerves of the peripheral nervous system.

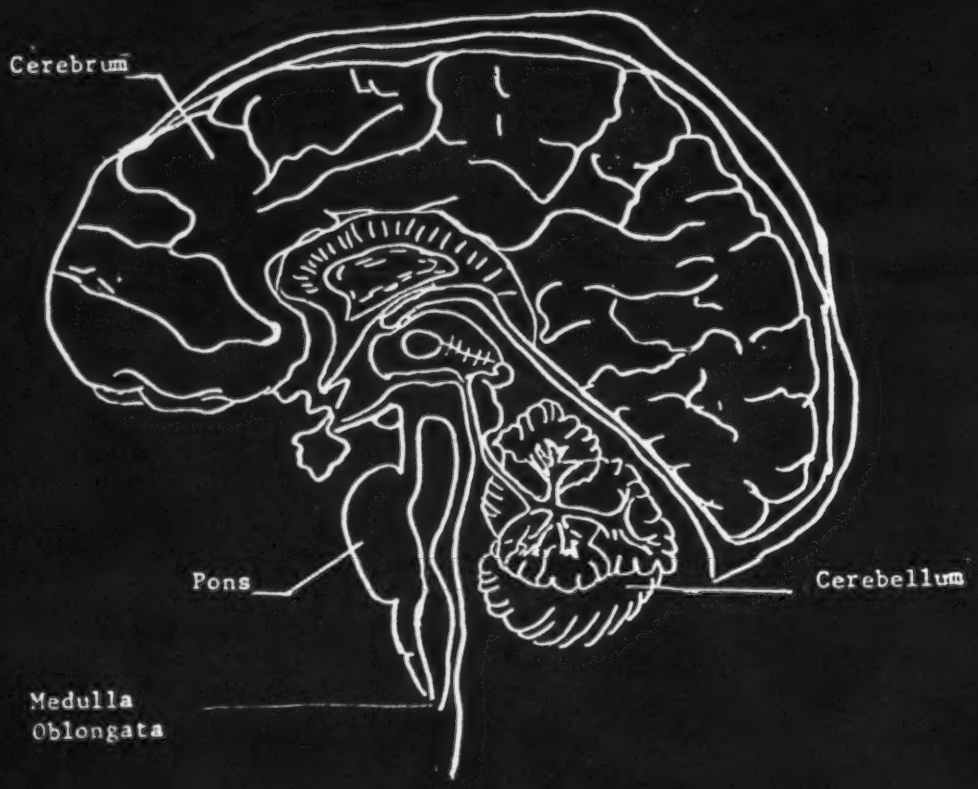
5. The Peripheral nervous system is composed of the sensory, motor, and

mixed nerves that run throughout the body. The function of the peripheral nervous system is the same as the function of the sensory and motor nerves. That function is to carry the impulses to and from the cerebro-spinal nervous system.

6. The autonomic or sympathetic nervous system is mainly responsible for regulating internal body functions. These internal functions are breathing, circulation, digestion and other gland activities.

7. In the next reading you will read about the Cranial Nerves. In this reading there is also a diagram of the brain that will point out the location of its five parts.

DIAGRAM OF THE BRAIN



División del Sistema Nervioso

1. En las primeras dos lecturas leiste de las partes muy básicas del sistema nervioso. En esta lectura se divide el sistema nervioso en tres partes básicas.

   Las partes básicas son:
   a. El sistema nervioso central o cerebro-espinal.
   b. El sistema nervioso periférico.
   c. El sistema nervioso autónomo.

2. El sistema nervioso central o cerebro-espinal está compuesto de el cerebro y la columna vertebral. El cerebro-espinal tiene dos funciones. Domina las funciones de los cinco sentidos y también domina los músculos voluntarios.

3. El cerebro se considera como la estación central de energía del cuerpo.

   El cerebro se divide en cinco partes. Las cinco partes son:
   a. Cerebro - la parte grande frontal. Esta controla las emociones, la voluntad y la razón.
   b. Cerebelo - la parte chica inferior; esta mantiene al cuerpo equilibrado.
   c. Puente de Varolio - es la parte frontal del cerebelo y conecta el cerebelo al cerebro.
   d. Medula Oblangada - parece un bulbo y conecta el cerebro a la columna vertebral.
   e. Nervios Craniales - doce pares de nervios que van del cerebro a las diferentes áreas de la cabeza, la cara y el cuello.

4. La columna vertebral está compuesta de una masa de células nerviosas o neuronas y fibras nerviosas que corren por todo el cuerpo. Hay treinta y uno nervios espinales que van a la piel, al tronco, a las extremidades del cuerpo y también conectan los nervios del sistema nervioso periférico.

5. El sistema periférico está compuesto de los nervios sensitivos, motores y mixtos que corren por el cuerpo. La función del sistema nervioso periférico es igual que la función de los nervios sensitivos y motores. Esa función es de conducir impulsos hacia el sistema nervioso central y desde él.

6. El sistema nervioso autónomo es responsable por las regulaciones internas corporales. Estas funciones internales o involuntarias son la respiración, la circulación, la digestion y la actividad glandular.

7. En la siguiente lectura leerás de los nervios craniales. En esta lectura hay un dibujo del cerebro que te dirá la locación de las cinco partes.

Dibujo del Cerebro

Find The Answers

1. The nervous system is divided into _____main parts.

   A. Two
   B. Four
   C. Three
   D. Five

2. The word in paragraph 2 which means controls is _____.

3. The words "central power station" in paragraph 3 refer to _____.

4. The article does not say so, but it makes you think that

   A. The cranial nerves control the hands.
   B. The nervous system is not very interesting or important.
   C. The brain is connected to every part of the body through the nerves.

5. The spinal cord is made up of masses of nerve cells.

   Yes No Does not say

6. On the whole, this story is about,

   A. The nerve cell in the eyes.
   B. The three main parts of the nervous system.
   C. The five senses.

7. The Peripheral nervous system is composed of

   A. The brain and spinal cord.
   B. Sensory, motor and mixed nerves.
   C. The cerebro-spine

5.3

Match the following:

_____Medulla Oblongata	A. functions are breathing and circulation
_____Peripheral	B. front of cerebellum
_____Cranial Nerves	C. looks like a bulb
_____Autonomic	D. keeps body in balance
_____Cerebro-spinal	E. composed of sensory, motor and mixed nerves.
_____Cerebrum	F. large frontal part of brain
_____Cerebellum	G. go from brain to face, neck and head
_____Pons	H. central nervous system

5.3

Fill in the blanks on the diagram using the following list of words.

Cerebrum
Medulla Oblongata
Pons
Cerebellum

Answer the following questions in your own words.

1. What are the two main functions of the central nervous system?

2. What are the five parts of the brain?

3. What is the Peripheral nervous system composed of and what is its function?

4. What is the function of the autonomic nervous system?

5. The nervous system is divided into what three main parts?

6. The brain is considered the central power station. Why?

Instructions:

In this article you will read about the cranial nerves. It is important that you know the location and function of these nerves in giving facial and scalp treatments. Below is a list of vocabulary which is important in the reading.

Instrucciones:

En este artículo vas a leer de los nervios craneales. Es importante que sepas la locación y función de estos nervios cuando das tratamientos faciales y tratamientos de cuero cabelludo. Abajo sigue una lista de vocabulario que es importante en esta lectura.

Vocabulary	Vocabulario
cranial nerves	nervios craneales
cervical nerve	nervio cervical
trigeminal or trifacial (fifth cranial)	nervio trigémico (quinto craneal)
facial nerve (seventh cranial)	nervio facial (séptimo craneal)
accessory nerve (eleventh cranial)	nervio espinal (onceno craneal)
ophthalmic	oftálmico
maxillary	maxilar
mandibular	mandibular

Keep the following questions in mind as you read the following article.
Te debes de hacer estas preguntas al leer este artículo.

1. What are the three cranial nerves described in this article?
   ¿Cuáles son los tres nervios craneales describidos en este artículo?

2. What are the three divisions of the trigeminal nerve?
   ¿Cuáles son las tres divisiones del nervio trigémico?

3. Which nerve controls the muscles of the face and neck?
   ¿Cuál nervio controla los músculos de la cara y el cuello?

4. What is the accessory nerve composed of?
   ¿De qué está compuesto el nervio espinal o craneal onceno?

5. Where do the cervical nerves originate and where do they branch out?
   ¿Dónde tienen origen los nervios cervicales y por dónde se extenden?

The Cranial Nerves

1. As you may remember from the previous reading, there are 12 pairs of cranial nerves. As a barber or a cosmetologist you will be working with three cranial nerves and the cervical nerves in giving facials or scalp treatments. The three cranial nerves are trigeminal or trifacial, the facial and the accessory nerve. The trigeminal and facial nerves are composed of mixed nerves (sensory-motor). The accessory nerves are composed of motor nerves.

2. The trigeminal or trifacial nerves comes out of the brain and out by the ear. This is the largest of the cranial nerves and has three main divisions. These divisions are ophthalmic, maxillary and mandibular. These three divisions also have sub-divisions. At the end of this reading you will find a diagram of these nerves and branches.

3. The facial nerve is the main motor nerve of the face. It starts by the lower part of the ear and with its branches reaches to the neck. This nerve controls the muscles of the face and neck. These nerves can be found on the same diagram.

4. The accessory nerve is located on the upper part of the back and neck. The accessory nerve is composed of the:

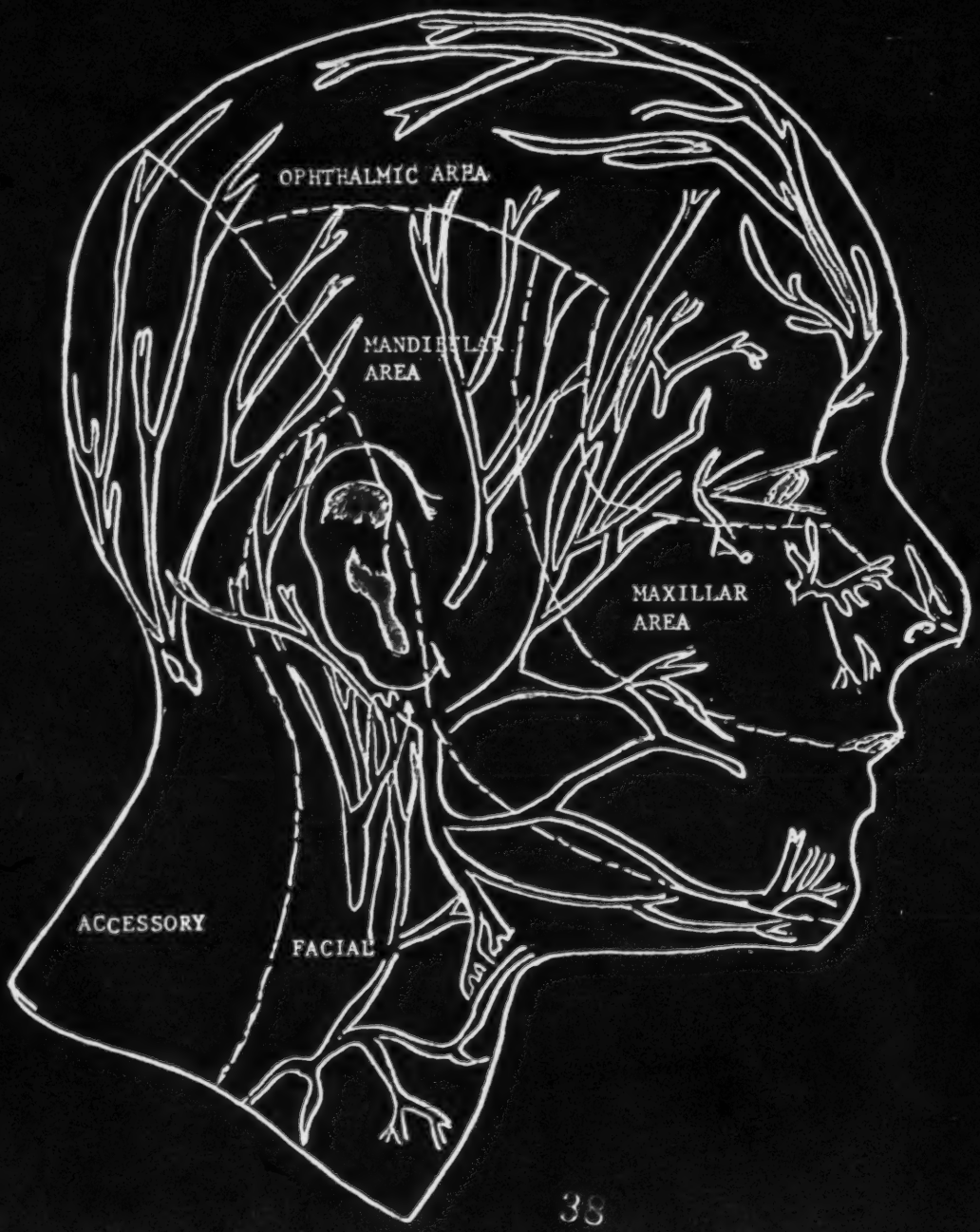
   a. Accessory portion which goes only to internal organs.

   b. Spinal portion which affects the muscles of the back and neck.

5. The last of the nerves is a group of nerves. These nerves start at the spinal cord and with their branches reach to the back of the head and neck. The diagram will show you the location of these nerves and branches.

6. Make sure you study the diagram so that you can learn the location of these nerves and their branches. The next reading will deal with nerve fatigue and relaxation.

CRANIAL NERVES



Los Nervios Craniales

1. Como recuerdas de la lectura anterior, hay doce pares de nervios craniales. Como peluquero o cosmetólogo trabajarás con tres nervios craniales y los nervios cervicales cuando das faciales o tratamientos del cuero cabelludo. Los tres nervios craniales son el nervio trigémico o trifacial, el facial y el nervio espinal. El nervio trigémico y el facial están compuestos de nervios mixtos (sensitivos-motores). El nervio espinal está compuesto de nervios motores.

2. El trigémico o nervio trifacial sale del cerebro y hacia el oído. Este es el más grande de los nervios craniales y tiene tres divisiones mayores. Estas divisiones son el oftálmico, el maxilar y el mandibular. Estas tres divisiones también tienen sub-divisiones. Al terminar esta lectura encontrarás un dibujo de estos nervios y sus ramas.

3. El nervio facial es el nervio motor principal de la cara. Empieza desde la parte inferior del oído, y sus ramas se extenden hasta el cuello. Este nervio controla los músculos de la cara y del cuello. Estos nervios también se representan en el mismo dibujo.

4. El nervio espinal está localizado en la parte superior de la espina y el cuello. El nervio espinal está compuesto de:

   a. La parte espinal cual va a los órganos internos.

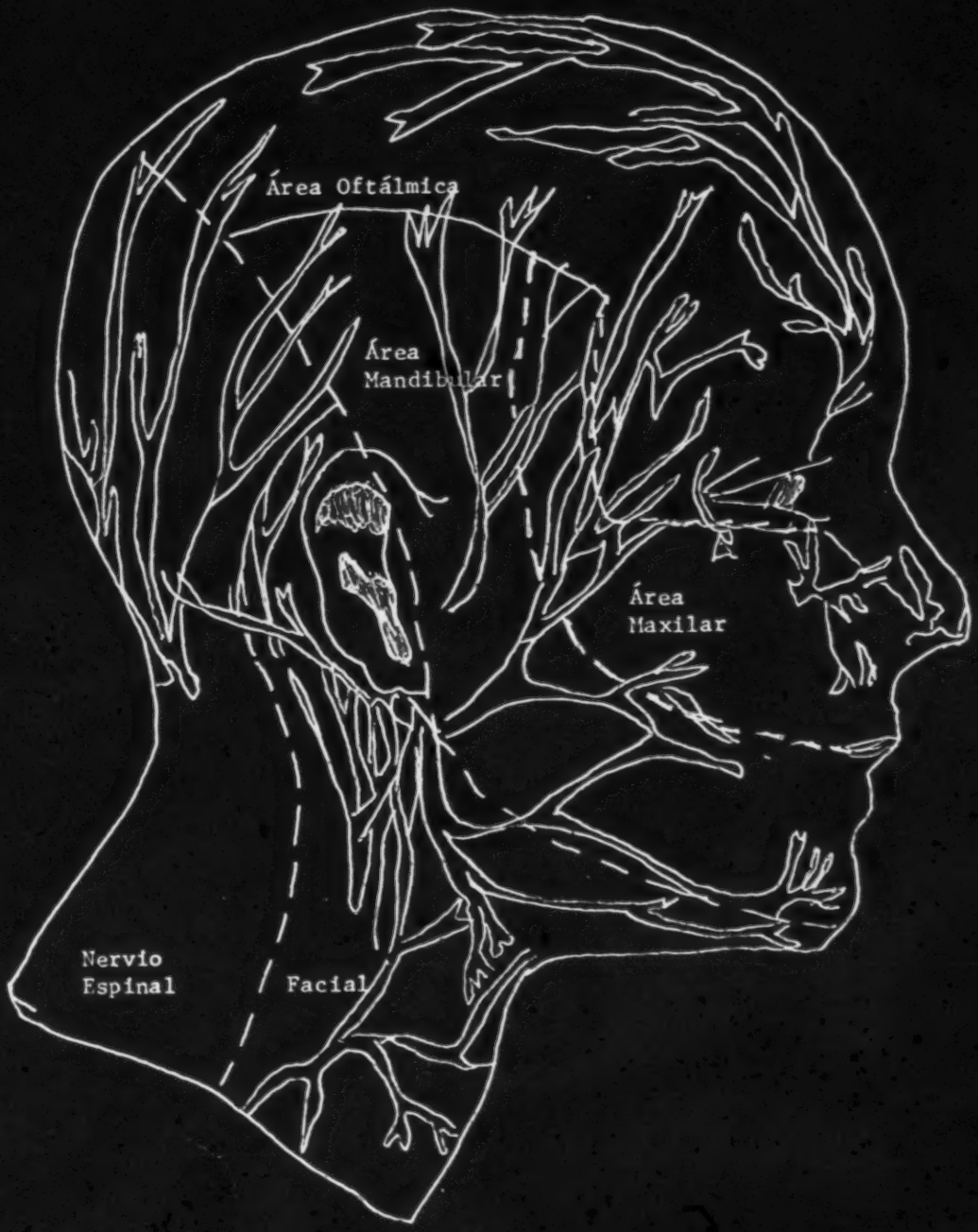
   b. La parte espinal cual afecta los músculos de la espina y del cuello.

5. El último de los nervios es un grupo de nervios. Estos nervios principian en la espina vertebral y con sus ramas alcanzan hasta detrás de la cabeza y el cuello. El dibujo te enseña la locación de estos nervios y sus ramas.

6. Estudia el dibujo para que aprendas la locación de estos nervios y sus ramas. La siguiente lectura tratará de cansancio y descanzo.

Nervios Craniales

5.4 (cont'



25b

Find the Answers

1. The accessory nerves are composed of _____nerves.

   A. Motor B. Mixed C. Sensory

2. The word in paragraph 3 that means to have power over is _____.

3. The words "main motor nerve of the face" refer to the words _____ _____.

4. While it is not directly stated the article suggests that

   A. The accessory nerve controls your jaw.
   B. The facial nerve allows you to move your neck.
   C. The accessory nerves are composed of sensory nerves.

5. The trigeminal nerve is the same as the trifacial.

   Yes No Does not say

6. On the whole, this story is about

   A. The spinal cord.
   B. The accessory nerves.
   C. The cranial nerves.

7. Which of the nerves are composed of sensory nerves and motor nerves?

   A. Internal nerve
   B. Trigeminal and trifacial
   C. Accessory.

Unscramble the following words.

1. nlrcaai _____
2. vclariec _____
3. rcycsesao _____
4. lciafa _____
5. rvnees _____

Write (T) true or (F) false before each of the following statements.

_____The accessory nerve is the main motor nerve of the face.

_____The facial nerve controls the muscles of the face and neck.

_____The accessory nerve is located on the upper part of the face.

_____The longest of the cranial nerves has three main divisions.

_____The accessory nerves are composed of sensory nerves.

Match the following:

_____Three cranial nerves

_____Seventh cranial nerve

_____Located upper part of back of neck.

_____Trigeminal and facial nerves

_____Largest of cranial nerves

_____Ophthalmic, maxillary,mandibular

_____Accessory nerve

_____Facial nerve

_____Accessory portion and spinal portion

_____Group of nerves

A. Composed of sensory-motor nerves.

B. Starts by the lower part of the ear and with its branches reaches to the neck.

C. Trifacial or trigeminal nerve.

D. Accessory nerve

E. Trigeminal, facial and accessory

F. Divisions of the largest cranial nerves.

G. Main motor nerve of the face.

H. Accessory nerve

I. Composed of motor nerves

J. Last of the nerves.

Answer the following questions:

1. What are the three cranial nerves?

2. Which nerves are composed of motor nerves?

3. What are mixed nerves?

4. Which nerve is the main motor nerve of the face?

5. What are the three main divisions of the largest cranial nerve?

6. What does the facial nerve control?

7. Which is the largest of the cranial nerves?

8. Where is the accessory nerve located?

9. What is the accessory nerve composed of?

10. Which nerves would a barber or cosmetologist be working with in giving facials or scalp treatments?

Instructions:

In this information sheet you will read about nerve fatigue and relaxation. Perhaps you will be able to relieve someone of nerve fatigue by knowing what to do about it. Below is a list of words which are important in this article.

Instrucciones:

En esta página de información vas a leer de la cansanzia de nervios y relajamiento (descanso). Tal vez podrás remediar a alguno de tus clientes de cansanzia de nervios sabiendo que hacer. Abajo sigue una lista de palabras importantes en este artículo.

Vocabulary	Vocabulario
nerve fatigue	cansanzio de nervios
nourishment	alimiento
relaxation	relajamiento (descanso)
massage	masaje
electric current	corrientes eléctricas
light rays	rayos de luz
heat rays	rayos de calor

Keep the following questions in mind as you read the information sheet.
Recuerda las siguientes preguntas al leer la página de información.

1. What are the signs accompanying nerve fatigue?
   ¿Cuáles son los signos que acompanian cansanzio de nervios?

2. What causes some of these symptons?
   ¿Qué causa estas síntomas?

3. How can you relieve your client of nerve fatigue?
   ¿Cómo puedes aliviar a tu cliente de cansanzio de nervios?

Nerve Fatigue and Relaxation

1. As a cosmetologist or barber you will deal with people from different walks of life. There will be times when they don't feel well. There are many reasons for your patrons feeling bad. One of these reasons is nerve fatigue. Nerve fatigue is more distressing than physical fatigue.

2. The signs that accompany nerve fatigue are weariness, irritability, poor complextion and dull eyes. Do you know what may cause some of these symptoms? If your guess was either worry or excessive mental or muscular work, you're right. Nerve energy comes from proper nourishment, exercise and oxygen. Nerve fatigue can also be relieved by rest and relaxation. This is where you become involved. If you notice that your patron is displaying nerve fatigue you may suggest some treatment of relaxation.

3. How can you bring about relaxation to your patron? There are various methods used; what must be done is to stimulate the nerves. This is where your knowledge of the nervous system becomes important. The nerves can be stimulated by massage. You can massage the nerves, and by knowing the central nerve areas, you can pause over them.

4. There are other methods also used for nerve stimulation. They can be stimulated with electric massage, electric current, light rays (infra-red or ultra-violet) and heat rays.

5. Now that you have read about the nervous system you may understand it better. It is important to know the details of the system so that you will be aware of what effects your treatments may have on your patrons.

Cansancio y Relajamiento de Nervios

1. Como cosmetólogo o peluquero tratarás con gente de toda clase. Habrá veces cuando algunos nó se sienten bien. Hay muchas razones por los cuales tus clientes a veces se sienten desanimados. Una de las razones puede ser cansancio de nervios. Cansancio de nervios es más penoso que cansancio fisical.

2. Las señas que acompañan a cansanzio de nervios son fatiga, irritabilidad, tez pálido y ojos lánguidos. ¿Sabes lo que puede causar algunas de estos síntomas? Si adivinaste que era preocupación excesiva o trabajo muscular o mental excesivo, entonces estas correcto. Energía nerviosa también se puede aliviar con descanso. Aquí es donde tú eres importante. Si notas que tu cliente tiene cansanzio de nervios, puedes sugerir un tratamiento de relajamiento.

3. ¿Cómo puedes hacer a tu cliente descansar o relajarse? Hay varios métodos que puedes utilizar; lo que debes hacer es estimular los nervios. Aquí es donde es importante y puedes aplicar tu sabiduría del sistema nervioso. Los nervios se pueden estimular con un masaje. Si sabes donde están las áreas centrales de los nervios, puedes darles mas atención y estimularles con el masaje.

4. Hay otros métodos que se utilizan para estimulación de los nervios. Se pueden estimular con masajes eléctricas, corrientes eléctricas, los rayos de luz, y rayos de calor.

5. Ahora que has leído del sistema nervioso puedes comprenderlo mejor. Es importante que sepas los detalles del sistema nervioso para que estés consciente de los efectos que tienen los tratamientos en tus clientes.

Find the Answers

1. One of the reasons your patrons may feel bad is

   A. To be mean B. Nerve fatigue C. Because he wants a hair style.

2. The word in paragraph 2 which means "go with" is _____.

3. The words "stimulated by massage" in paragraph 3 refer to _____.

4. The article does not say so, but it makes you think that

   A. Your patrons are always tired.
   B. You can make your patrons feel better if you know what to do to relieve nerve fatigue.
   C. It is your patrons problem if they don't feel well.

5. By understanding the nervous system you will know what affects your treatments have on your patrons.

   Yes No Does not say

6. On the whole, this story is about

   A. Nerve fatigue and relaxation.
   B. Ultra ray treatments
   C. Massages

7. What is one sympton of nerve fatigue?

   A. Weariness and irritability
   B. Poor complextion and dull eyes
   C. Both A and B.

Answer the following:

1. What are the signs that accompany nerve fatigue?

2. What causes some of these symptons?

3. What methods can you use to relieve nerve fatigue?

4. Why is it important to know about nerve fatigue?

5. Why should you know the location of the central nerve areas?

Fill in the blanks

How can _____bring about _____to your patron? There are various _____used; what must be done is to _____the nerves. This _____where your knowledge of the _____system becomes important. The _____can be stimulated by _____. You can massage the _____, and by knowing the _____nerve areas, you can _____over them.

Answer the following questions in your own words.

1. What causes nerve fatigue?

2. What are some of the symptoms that accompany nerve fatigue?

3. Where does nerve energy come from?

4. Why is your knowledge of the nervous system important?

5. What can you as a cosmetologist or barber do to relieve nerve fatigue in your patrons?

6. What must you do to stimulate the nerves?

7. What other methods are used for nerve stimulation?

POST-TEST

1. Name the five sense organs and the function of each.

2. Why is the nervous system referred to as a communication system?

3. Name the three cranial nerves that barbers and cosmetologists need to know about.

4. What are the two types of nerve fibers and what do they do?

5. What are the functions of the sensory and motor nerves?

6. How can you relieve your client of nerve fatigue?

7. What are the three divisions of the trigeminal nerve?

8. What are the signs of nerve fatigue?

9. Name the five parts that make up the brain.

10. What are the two main functions of the central nervous system?

Vocabulary	Vocabulario
accessory	accesorio
afferent	aferente
autonomic	autonómico
barber	barbero
brains	sesos
branch	rama
breath	respiración
cell	célula
central	central
cerebellum	cerebelo
cerebrum	cerebro
cervical	cervical
circulation	circulación
communication	comunicación
compose	componer
complexion	complexión
cosmetology	cosmetología
cranial	cráneo
dendrite	dendrita
digestion	digestión
distress	angustiar
effect	efecto
efferent	eferente
electric current	coriente eléctrica
exercise	ejercicio
facial	facial

Vocabulary	Vocabulario
fatigue	cansancio
feel	sentir
fiber	hebra
gland	glándula
hear	oír
impulse	impulso
internal	interno
irritable	irritable
knowledge	conocimiento
light rays	rayos de luz
locate	localizar
mandibular	mandíbular
massage	masaje
maxillary	maxilar
medulla oblongata	medula oblongada
message	mensaje
mix	mezclar
motion	moción
motor	motor
muscle	músculo
nerve	nervio
nervous system	sistema nervioso
neuron	neurona
nourishment	nutrimento
nucleus	núcleo
ophthalmic	oftálmico
oxygen	oxígeno

Vocabulary	Vocabulario
peripheral	periférico
physical	físico
pons	puente de varolio
previous	previo
proper	propio
regulate	regular
relaxation	descanso
remove	remover
scalp	cuero cabelludo
sensitive	sensitivo
sensory	sensorio
sight	vista
smell	oler
spinal	espinal
spinal cord	columna espinal
stimulate	estimular
symptom	síntoma
taste	sabor
treatment	tratamiento
unit	unidad
voluntary	voluntario
weariness	fatiga
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